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CATALOGUE

OF

REFERENCE BOOKS

IN

PHYSICS

SUITABLE FOR

SECONDARY SCHOOLS

EASTERN ASSOCIATION
OF
PHYSICS TEACHERS

1907

CATALOGUE

OF

REFERENCE BOOKS

IN

PHYSICS

SUITABLE FOR SECONDARY SCHOOLS

REVISED EDITION

Compiled by a Committee of the

EASTERN ASSOCIATION OF PHYSICS TEACHERS

PUBLISHED BY THE ASSOCIATION

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I. O. PALMER, *President*

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INTRODUCTION.

A list of reference books in Physics was published by the Association six years ago, through a conviction that a reference library for pupils and teachers should be available in connection with the work in Physics in the secondary schools. Owing to the rapid development of the science, the changes in theories and methods of presentation, as well as the great number of new books published in this department of science, a complete revision was ordered by the Association to meet present needs.

In making the revision this committee is deeply indebted to the former committee under the chairmanship of Charles R. Allen for the general plan of the work. Many books included in the earlier list have now been omitted as less valuable than later books, or because out of print. Many later publications have been added.

The list is primarily designed to be a guide and help to the teacher in selecting his reference library. The conditions and nature of the instruction in science vary so widely in different schools that it has seemed best to make the list quite comprehensive, trusting that the appended comments may enable a teacher to select those books most suited to his special needs. While the principal list includes essentially books of reference for secondary schools, there have been added the following minor lists:

(*a*) A title list of the more recent high school textbooks of Physics, with their publishers.

(*b*) A list of the addresses of some of the more important publishers of scientific books.

(*c*) A list of books costing $30, which would constitute a valuable nucleus for a library.

(*d*) A second list of books costing $30, which, with the above list, would constitute a valuable and economical working library.

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Under each title is given data regarding size, price, date, publisher, etc., and a comment by some member familiar with the book, which is intended to enable teachers to judge of its availability for his special needs.

Thanks are due to members of the Association for their co-operation, and to publishers for courteous assistance. If this work may prove an aid in promoting the efficiency of the work in Physics in secondary schools, the object of its publication will have been attained.

The Secretary of the Association will give any information desired in regard to obtaining any further copies of this list.

JOHN W. HUTCHINS,
CLEMENT C. HYDE,
FRANK M. GREENLAW,

Committee on Reference Books.

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GENERAL TREATISES.

Text-Book of General Physics.

Author, Joseph S. Ames, Ph.D. Published by American Book Company. Size, 5 1-2 in. x 8 1-4 in. Pages, 768. Date, 1904. Price, $3.50.

A thoroughly modern college text-book designed (a) to give a concise statement of the experimental facts on which the science of Physics is based and (b) to present the accepted theories, which correlate and explain these facts. It is one of the most satisfactory books for general teachers' reference. Parts of it are too mathematical for secondary students, but many portions are entirely within range of the pupil's study. Very little attention is given to the familiar applications of the principles enunciated. There are about 300 cuts.

Physics.

Edited by George A. Barker. Published by Henry Holt & Co. American Science Series, Advanced Course. Size, 5 1-2 in. x 8 3-4 in. Pages, 902. Date, 1892. Price, $3.50.

A general treatise written from the standpoint of matter and ether. All the phenomena of physics are considered as due to the condition of matter and ether stress. Geometry and trigonometry are used to some extent. Illustrations rather few, mainly diagrammatic. Little general description of experiments or apparatus.

University Physics.

Author, H. S. Carhart. Published by Allyn & Bacon, Boston. Size, 7 1-2 in. x 5 1-2 in. Price, per vol., $1.50. Vol. I, Topics: Mechanics, Sound and Light. Revised and rewritten edition, 1906. Pages, 346. Vol. II, Topics: Heat Electricity and Magnetism. Revised and rewritten edition, 1904. Pages, 456.

This is a comprehensive treatment of the principles of Physics, a descriptive work covering the whole ground. A fair knowledge of algebra, geometry and trigonometry would be needed for an intelligent understanding of many of the discussions. There is very little description of experiments and the majority of the illustrations are diagrammatic. It contains but few references to applications of principles either by descriptions or by problems. The major part of the book would be above the average secondary school pupil, but it is an excellent reference book for any one having the necessary mathematical knowledge.

Ganot's Physics.

Atkinson's translation. Published by William Wood & Co., New York. Size, 8.5 in. x 6 in. Pages, 1,169. Date, 17th edition, enlarged, 1905. Price, $5.00.

This is a general treatise on the principles and applications of Physics. It corresponds closely in its arrangement to the average secondary school text-book. It contains many illustrations of apparatus and descriptions of experiments. The treatment is mainly non-mathematical. The appendix contains a number of problems. Very little of it should be beyond the grasp of a secondary school pupil. This last edition is one of the most satisfactory descriptive treatises for general reference.

Practical Physics.

Author, Glazebrook & Shaw. Published by Longmans, Green & Co. Size, 7 in. x 4 1-2 in. Pages, 689. Date, 1905, revised, enlarged. Price, $2.50.

A thorough book in which the facts are put clearly and with mathematical exactness. It is on the whole too difficult for secondary school pupils. It was written for the assistance of teachers and advanced students in physical laboratories, and is worthy of their attention. It covers the whole range of subjects in physics. It contains many mathematical formulae and 134 wood cuts.

General Physics.

Authors, Charles S. Hastings, Ph.D., and Frederick E. Beach, Ph.D., of Yale University. Published by Ginn & Co., Boston. Size, 6 in. x 8 1-2 in. Pages, 768. Date, 1899. Price, $2.75.

This book is developed from the idea that an understanding of energy is absolutely essential to the subject and that elementary mechanics must be regarded as the logical basis of the whole science of Physics. Hence the treatment of Mechanics is more complete than is ordinarily the case. The continuity of the science is emphasized.

To read this book, a working knowledge of trigonometry is necessary. Deserving of special notice are the chapters on Change of State, Thermodynamics, Kinetic Theory of Gases, Electric Fields and Electric Waves. The cuts (495) are new, well executed and up to date. The tables of constants are numerous and complete. Many problems are appended to the various chapters. Designed to be a college text-book.

The Elements of Physics.

Authors, Edward L. Nichols and William S. Franklin. Published by The Macmillan Co. Size, 6 in. x 9 in. Numerous illustrations. Vol. I, Mechanics and Heat. Pages, 290. Revised, 1903. Price, $1.90. Vol. II, Electricity and Magnetism. Pages, 303. Entirely rewritten. Price, $1.90. Vol. III, Light and Sound. Pages, 262. Rewritten. Price, $1.50.

This is a college text-book. The volumes are written for use in such institutions as give their undergraduates a reasonably good mathematical training. It is intended for teachers who desire to treat their subject as an exact science, and who are prepared to supplement the brief subject-matter of the text by demonstrations, illustrations, and discussions from the fund of their own knowledge. A modern scientific work. Knowledge of calculus is necessary for intelligent reading. An excellent book of reference for teachers.

A Text-Book of Physics.

Authors, J. H. Poynting and J. J. Thompson. Published by Charles Griffin & Co., London. Size, 6 in. x 9 in. Pages, about 350 in each volume. Date, 1906. Many illustrations. Vol. I, Properties of Matter, $4.25. Vol. II, Sound, $2.75. Vol. III, Heat, $2.90. Vol. IV, Magnetism and Electricity. Vol. V, Light.

This is a valuable and very comprehensive treatise, designed to be a complete text-book for students who lay stress on the experimental part of Physics. The mathematics used is mostly elementary. The book is written in the English style. The descriptions are all minutely detailed, and cover the whole field of physics. Vols. IV and V will soon be issued.

A Text-Book of Physics.

Author, W. Watson. Published by Longmans, Green & Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 896. Date, 1899. Price, $2.90.

This is one of the best general reference treatises on Physics. It assumes some knowledge of the elements of physics, also elementary algebra, geometry and trigonometry in certain portions. There is no attempt to describe experiments illustrative of the various phenomena, but the discussion of phenomena and the principles involved is very complete. Much of it is valuable for high school pupils, a part of it is too difficult. It is intended to be a college or scientific school text-book. The 564 figures are almost entirely diagrammatic.

The New Knowledge.

Author, Prof. Robert K. Duncan, of Washington and Jefferson College. Publisher, A. S. Barnes & Co., 11 East 24th Street, New York; 101 Tremont Street, Boston. Size, 5 1-2 in. x 8 1-4 in. Pages, 263. Date, 1905. Price, $2.00.

This is an excellent resume of the modern theories regarding the composition of matter and the conservation of energy. In clear simple language it states the newest ideas evolved from the study of radio-activity. It is interesting reading for the student and the teacher because of its comprehensiveness and its plain presentation of the subject. It is well worth a place in every physical and chemical laboratory.

Matter, Ether, and Motion.

By Prof. A. E. Dolbear. Published by Lothrop, Lee & Shepard Co. Size, 5 1-4 in. x 7 3-4 in. Pages, 334. Revised edition. Price, $2.00.

The author discusses the properties of matter and the characteristics of the ether with their possible relation to each other. The chapters on the origin and nature of heat, ether waves and electricity are written in a manner which makes clear recent views. It is likely to secure and hold the interest of any reader, and to be stimulating and suggestive. The subject is treated entirely from the standpoint of the molecular and ether theories.

Matter, Energy, Force, and Work.

Author, S. W. Holman. Published by the Macmillan Co. Size, 5 in. x 7 1-2 in. Pages, 257. Date, 1898. Price, $2.50.

A discussion of "fundamental physical concepts." It is intended for the teacher or advanced student. It is particularly valuable for its statements of various theories of matter and energy. The treatment is historical as well as critical, and the reader can feel that in some measure he has covered the entire ground. Le Sage's Theory of Gravitation and the Vortex Atom Theory is discussed in an especially interesting manner. Portions of the books would be read with pleasure and profit by high school pupils scientifically inclined.

Waves and Ripples in Water, Air, and Ether.

Author, J. A. Fleming, F. R. S. Published by D. Van Nostrand Company. Size, 7 1-4 in. x 5 in. Pages, 299. Date, 1905. Price, $2.00.

This contains a course of Christmas Lectures given before the Royal Institution, London. The discussion is remarkably clear, simple, and free from technicalities. It presents many experiments that are both interesting and simple and is a storehouse of facts concerning waves of all kinds. It will perhaps prove more helpful to the teacher than to the class; and yet it is just the book to which to send boys and girls for the investigation of specific topics. The best thing in the book is the brief, simple, and thoroughly intelligent account of the nature and production of electric waves.

Molecules and Molecular Theory of Matter.

Author, A. D. Risteen. Published by Ginn & Co. Size, 6 in. x 8 1-2 in. Pages, 223. Date, 1895. Price, $2.00.

This is one of the very best discussions of the molecular theory. It includes: I, General Considerations; II, Kinetic Theory of Gases; III, Molecular Theory of Liquids; IV, Molecular Theory of Solids; V, Molecular magnitudes; VI, The Constitution of Molecules.

It uses some calculus, but is, in the main, non-mathematical. The history of molecular theories is discussed, and their development traced.

Modern Theory of Physical Phenomena.

Author, Augusto Righi. Translator, A. Trowbridge, University of Wisconsin. Published by The Macmillan Co. Size, 5 in. x 7 1-2 in. Pages, 165. Date, 1904. Price, $1.10.

Written to interest the greatest number of readers in the new physics. Treatment is very elementary and readable. It contains Chapters on: I, Electric Ions and Electrons; II, The Electrons and the Phenomena of Light; III, Nature of the Cathode Ray; IV, The Ions in Gases and in Solids; V, Radio Activity; VI, Mass Velocity and Electric Charge of the Ions and Electrons; VII, The Electrons and the Constitution of Matter.

Grammar of Science.

Author, Karl Pearson. Published by Adam & Chas. Black, London. Size, 5 1-2 in. x 9 in. Pages, 548. Date, 1900. Price, $2.50.

A very exhaustive examination of the philosophical bases of the theories of science. Useless for the pupil and very useful for the teachers who seek fundamentals in their scientific thinking.

Fragments of Science.

Size, 8 in. x 5 in. Vol. I and II. Date, 1875. Price, $4.00.

New Fragments of Science.

Size, 8 in. x 5 in. Pages, 497. Date, 1892. Price, $2.00.
Author, John Tyndall. Published by D. Appleton & Co.

These books contain essays on "Matter and Form," "The Scientific Use of the Imagination," "On Radiation," "Radiant Heat," also "About Common Water," "Atoms, Molecules and Ether Waves," "Life in the Alps," and many other topics not directly connected with our instruction in Physics. Though published several years ago they are well worth reading and will always be so. They are valuable for both pupil and teacher. The author's name is sufficient guaranty that the essays are accurate and interesting.

Experimental Science.

Author, George M. Hopkins. Published by Munn & Co. Size, 6 1-4 in. x 9 1-2 in. Two volumes. Pages, 1,100. Date, 1902. Price, $5.00.

Treats in a popular manner the experimental demonstration of physical laws and resulting phenomena. Contains specific directions for the construction of many pieces of apparatus, especially electrical. Would appeal strongly to a pupil in general physics who was of a constructive turn of mind. Nine hundred illustrations. One of the best books for a high school library.

Introduction to Astronomy.

Author, Forest R. Moulton, Ph.D. Published by The Macmillan Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 555. Date, 1906. Price, $1.60.

Not only is this an excellent modern Astronomy on the laboratory plan, but it is included in this list because it contains many chapters correlating physics with astronomy. These subjects are prominent: Newton's Laws, Construction and Use of Telescopes and Other Optical Instruments, Earth's Density, Laws of Motion, Falling Bodies, Gravitation Laws, Atmospheric Conditions, Sun's Light and Heat, The Spectroscope.

Scientific American Cyclopaedia of Receipts, Notes and Queries.

Published by Munn & Co. Size, 9 in. x 6 in. Pages, 725. Double columns, fine print. Date, 1900. Price, $5.00.

The title describes the book. A very valuable and reliable work.

International Catalogue of Scientific Literature.

Publisher, Harrison & Sons, 45 St. Martin's Lane, London.

Those who can have access to some large library, as the Boston Public Library, will find this a very valuable guide to Scientific Literature. It devotes to Physics alone, each year (beginning 1902) one complete volume of 300 to 400 pages in giving a full list of books and periodical articles issued during the previous year. This takes up articles in all departments of Physics as issued in various languages. It is well classified by authors and by subjects, and is of great value to a teacher who is making a thorough study of some branch of Physics.

MECHANICS.

Mechanics, (Cambridge Physical Series).

Author, John Cox, F. R. S. C. Publisher, Cambridge University Press. Size, 5 1-2 in. x 9 in. Pages, 332. Date, 1904. Price, $2.75.

The author attempts to develop the principles in historic order, starting from real problems, and showing how the great investigators proceeded. He interests the student in the personality of the great physicists. The mathematics is reserved until the close of the course. The subject is divided into four books: I, The Winning of the Principles; II, Matter and Statement of Principles; III, Application to Problems; IV, Elements of Rigid Mechanics.

Elementary Experimental Mechanics.

Author, A. Wilmer Duff, D. Sc., of Worcester Polytechnic Institute. Publisher, The Macmillan Co. Size, 7 1-2 in. x 5 in. Pages, 267. Date, 1905. Price, $1.50.

An excellent work. Theory and practice are combined as closely as possible. Grasp of principles emphasized rather than skill in measurements. The book contains many illustrations, diagrams, problems and reference tables. The apparatus is largely that which is made by the International Instrument Company of Cambridge. Very useful for lecture work in high schools. Theoretical statements are concise.

Principles of Mechanics.

Author, T. M. Goodeve. Published by Longmans, Green & Co. Size, 7 1-2 in. x 5 in. Pages, 358. Date, 1895. Price, $2.00.

A general treatise on mechanics with applications to common forms of machinery. The treatment is rather mathematical, but the application of principles to mechanics is very clear. It would be mainly useful to the teacher. 253 wood cuts. The author makes continual reference to the practice and experience of mechanics, and emphasizes the relation of the theory of heat to mechanics. An appendix contains many problems.

Elementary Mechanics.

Author, Oliver J. Lodge. Published by Van Nostrand & Co. and W. & R. Chambers, London. Size, 5 in. x 7 in. Pages, 208. Date, 1891. Price, $1.00.

This is one of Chambers' Elementary Science Manuals. The book aims at giving a clear knowledge of the principles of the subject, includng Hydrostatics and Pneumatics, in an elementary manner, without assuming any practical knowledge beyond simple algebra. Mainly within the grasp of secondary school pupils.

Science of Mechanics.

Author, Dr. Ernst Mach. Translated by T. J. McCormack. Published by Open Court Publishing Co., Chicago. Size, 5 1-2 in. x 7 3-4 in. Pages, 605. Date, 2d edition, 1902. Cuts, 259. Price, $2.00.

This is almost entirely theoretical. Its chief point of value is its discussion of the work of eminent investigators in the early history of the science. Special attention is given to Galileo, Newton and Huygens, and many other early investigators, showing the origin of many modern theories. It contains interesting cuts of old prints.

Mechanics for Engineers.

Author, Arthur Morley, M. Sc. Published by Longmans, Green & Co. Size, 5 in. x 7 1-2 in. Pages, 278. Date, 1905. Price, $1.20.

A first course in the principles of Mechanics for engineering students. The gravitation system of units is used as prevailing among engineers. Calculus not used. Energy, work, power, and graphical statics given prominence. A valuable supplementary book for teachers and advanced secondary pupils. Too difficult for ordinary classes.

Mechanics, Molecular Physics and Heat.

Author, R. A. Millikan, Ph.D., Chicago. Published by Ginn & Co. Size, 6 in. x 8 1-2 in. Pages, 242. Date, 1903. Price, $1.50.

This is a combined text-book, laboratory and problem book, covering one-third the course in Physics, and adapted to the first course in Physics for college pupils who have had a year of secondary school physics and some trigonometry. Of value to secondary teachers in showing the trend of modern study of Physics in our most progressive colleges. Old ideas eliminated, modern investigation methods emphasized.

American Mechanical Dictionary.

Vols. I, II, III. Pages, 2,800. Date, 1877. Also

New Mechanical Dictionary.

One volume supplementary to the above. Date, 1883. Author, Edward H. Knight. Published by Houghton, Mifflin & Co. Size, 10 1-2 in. x 7 in. Price for the set of four vols., $27.50.

The name defines its functions. It is not a recent work but it gives a very complete description of all practical machines and mechanical processes, with short historical sketches of the more important ones. It defines fully a large number of mechanical terms. There are 7,000 cuts. At the end of each article of importance are given references to magazine articles bearing on the subject.

Self-Propelled Vehicles.

Author, James E. Homans. Published by Theo. Audel & Co., New York. Size, 6 in. x 8 1-2 in. Pages, 650. Date, 1906. Price, $2.00.

A treatise upon the automobile, with 500 illustrations. Of value to the teacher because of the treatment in popular language of the construction and theory of the gasolene and steam engines and the storage battery. Much of interest is given concerning the history of the development of self-propelled vehicles. A mine of information to the teacher with an inquisitive class.

HEAT.

Practical Exercises in Sound, Light, and Heat.

Author, Joseph S. Dexter, B. S., London. Published by Longmans, Green & Co. Size, 7 1-2 in. x 5 in. Pages, 284. Date, 1901. Price, 90 cents.

Although elementary, this work is designed for a second year's course in the field of Physics. It describes experiments very minutely and contains many excellent suggestions for a class in Physics which has completed a preliminary year's course. While mostly experimental, it contains much theory interwoven with experiment. The treatment of Heat is quite full.

Theory of Heat.

Author, J. Clerk Maxwell. Published by Longmans, Green & Co. Size, 5 in. x 7 in. Pages, 357. Date, reprinted with additions, 1904. Price, $1.50.

This book contains some of the best discussions of The Theory of the Constitution of Matter and the Kinetic Theory of Gases available in a condensed form; it is non-mathematical in treatment and is a standard book for reference for teachers and advanced pupils. It includes chapters on Thermometry, Calorimetry, Measurement of internal forces, Heat engines, Latent Heat, Radiation, Convection, Conduction, Elasticity and Vicosity, together with various theoretical discussions.

The Theory of Heat.

Author, Thomas Preston. Published by The Macmillan Co. Size, 7 in. x 9 in. Pages, 719. Date, revised edition, 1904. Price, $6.00.

This is a comprehensive and authoritative treatment of the subject, and forms, with its companion volume, Preston's Theory of Light, an excellent treatment of Heat and Light. The subject is developed in its historical order, the classical experiments being described in detail. The Kinetic Theory of Gases is taken up only so far as to meet the immediate requirements of the author. In the chapters on Thermodynamics calculus is used freely and in other chapters occasionally. There are 190 cuts and frequent tables of constants. It is a standard book of reference.

An Elementary Treatise on Heat.

Author, Balfour Stewart. Published by Clarendon Press, Oxford, Eng. Size, 5 in. x 7 in. Pages, 462. Date, 1881. Price, $2.25.

An excellent and comprehensive discussion of the science of heat. Many diagrams and illustrations. In general, descriptive and non-mathematical. Well suited to supplement an ordinary text-book.

Heat.

Author, P. G. Tait. Published by The Macmillan Co. Size, 5 in. x 7 1-4 in. Pages, 372. Date, 1892. Price, $2.00.

This elementary work is not easy reading, owing more to the author's style than to the mathematical treatment of the subject. Calculus appears occasionally. The contents include: 1. Nature of Heat. 2. Effects of Heat. 3. Measurement of Heat and Temperature. 4. Sources of Heat. 5. Transference of Heat. 6. Transformation of Heat Experimental illustration of the discussion is sparingly used.

Heat, a Mode of Motion.

Author, John Tyndall. Published by D. Appleton & Co. Size, 5 1-2 in. x 8 in. Pages, 591. Date, 6th edition, 1898. Price, $2.50.

This well known book, which dwells upon the historical development of the subject, treats of heat as it would be taken up in a series of experimental lectures. The molecular constitution of matter and the conservation of energy appear to be the central thoughts around which the various phenomena are grouped. It is a valuable book of reference.

Heat as a Form of Energy.

Author, Robert H. Thurston. Published by Houghton, Mifflin & Co. Size, 5 in. x 7 in. Pages, 261. Date, 1890. Price, $1.25.

Presents to the reader, in popular language, an outline of the growth of the modern philosophy of thermal energy. It traces the development of the science from the myths of the ancients and shows how the facts of modern science became established.

Elementary Lessons in Heat, Light, and Sound.

Author, D. E. Jones. Published by The Macmillan Co. Size, 5 in. x 7 1-2 in. Pages, 282. Date, 1891. Price, 70 cents.

An experimental course in Heat, Light and Sound, with brief instructions for making and using the necessary apparatus. At the end of each chapter are numerical examples based on the subject matter of the chapter. The book gives a large amount of useful information and the methods by which it is obtained.

History of the Growth of the Steam Engine.

Author, Robert H. Thurston. Published by D. Appleton & Co. Size, 5 1-2 in. x 7 3-4 in. Pages, 530. Date, 1897, 4th Edition. Price, $2.50.

An exhaustive and trustworthy account of the subject, containing a careful synopsis of the records and traditions relating to the first discovery and gradual development of heat-engines; also an interesting chapter outlining the direction and limitations of improvement in the future. 163 illustrations.

LIGHT.

Light.

("Science for the Young" Series.) Author, Jacob Abbott. Published by Harper & Bros. Size, 12mo. Pages, 306. Date, 1899 (last ed). Price, $1.50.

Gives, under narrative form, a popular treatment of light, its phenomena and laws. Well within the grasp of secondary school pupils, even the younger ones. Valuable for supplementary reading.

Physical Optics.

Author, R. T. Glazebrook. Published by Longmans, Green & Co. Size, 5 in. x 7 in. Pages, 448. Date, 1893. Price, $2.00.

This book deduces the laws of optics and consequences of the undulatory theory of light, but at the same time no very decided line is drawn between physical and geometrical optics. Contents: Wave motions and their propagation, Reflection and Refraction, Interference, Diffraction, Spectra, Double Refraction and Polarized Light, Electro-Optics, Velocity of Light. A good reference book for the physical library. 183 illustrations of apparatus.

Theory of Light.

Author, Thomas Preston, Univ. of Ireland. Published by The Macmillan Co. Size, 6 in. x 9 in. Pages, 586. Date, 3d Edition, 1901. Price, $5.00.

The author endeavors to give an account of the most important optical researches from the earliest times up to the present. The text contains, in addition to the physical theory, a detailed account of the most important experiments and physical measurements, such as the determination of the velocity of light, wave lengths, refractive indices, etc. Some of Newton's fundamental experiments on refrangibility of light and colored rings are taken from the original accounts, the author in this way endeavoring to direct attention to Newton's work, and to show that in this department of scientific research as in some others he stands almost without a rival. There are 251 excellent cuts. The book is one of the best reference books on the subject that is available.

The Theory of Optics.

Author, Arthur Schuster, Ph.D., F. R. S., Univ. Manchester, England. Published by Edward Arnold, London (Longmans, Green & Co., agt.). Size, 5 1-2 in. x 8 3-4 in. Pages, 340. Date, 1904. Price, $4.00.

This is an exposition of the Electro-magnetic theory of light, and an attempt to reduce to a mechanical basis the equations and principles now accepted as the electro-magnetic theory. Part one, in which the mathematics is more simple, would be of much interest to the teacher who has a good working knowledge of trigonometry. It is too mathematical for high school pupils.

Practical Exercises in Light.

Author, Reginald S. Clay, D. Sc., London. Published by The Macmillan Co. Size, 5 in. x 7 in. Pages, 183. Date, 1902. Price, 60 cents.

Designed to be a laboratory course for scientific schools, with descriptive notes. Since the apparatus is mostly simple and the mathematics elementary, it is nearly all within the range of high school pupils. Well suited to advanced classes in high school Physics.

Light, Visible and Invisible.

Author, Silvanus P. Thompson. Published by The Macmillan Co. Size, 7 1-2 in. x 5 in. Pages, 294. Date, 1897. Price, $2.00.

A series of most interesting and popular lectures. Each lecture is followed by an appendix discussing the theory suggested by the lecture. Geometrical optics, anomalous refraction, the elastic solid theory of light, and the electro-magnetic theory of light are here discussed. It contains a most admirable account of the formation of the spectrum and the phenomena connected with it. Special attention is paid to effects produced at the ultra-violet and infrared ends. Phenomena of polarization and fluorescence are also explained. The book is one of great value to pupils for collateral reading, and is no less valuable to teachers. The style is fascinating and it contains no mathematics except in the appendices. It is thoroughly up to date and is well illustrated. It presents many suggestive experiments for the lecture room.

Light for Students.

Author, Edwin Edser. Published by The Macmillan Co. Size, 5 in. x 7 in. Pages, 579. Date, 1902. Price, $1.50.

One-half devoted to geometrical optics, which is as simple as an accurate treatise on this subject can be made. Calculus not used. Many illustrative experiments described. One-half devoted to the wave theory of light. 306 figures. Maxwell's Electro-magnetic theory is not considered.

Light.

Author, Lewis Wright. Published by The Macmillan Co., New York. Size, 7 3-4 in. x 5 in. Pages, 391. Date, 1892, 2d edition. Price, $2.00.

An experimental course in Physical Optics in which projection of the phenomena upon the screen is made much of. The aim of the book is "to give such a clear conceptual grasp of the chief facts in Physical Optics as may make text-books real," by means of "something like a complete course of actual experiments on the physical realities which underlie the phenomena of Light and Color." The author has chapters on (1) The Lantern and accessory apparatus, (2) Reflection, (3) Refraction, (4) Spectra, (5) Undulatory Theory of Light, (6) Color, (7) Spectrum Analysis, (8) Phosphorescence and Fluorescence, (9) Interference, (10) Double Refraction and Polarization. (11-15) A Complete Discussion of Polarization. There are nine full page colored plates and 207 excellent cuts and diagrams. The book is non-mathematical in its treatment of the subject and is a valuable reference book for use of pupil or teacher.

Elementary Color.

Author, Milton Bradley, with introduction by Henry Lefavour. Published by Milton Bradley Co., 120 Boylston Street, Boston. Size, 5 1-2 in. x 8 in. Pages, 128. Date, 1895. Price, 75 cents.

A presentation of a system of elementary color based on the science of chromatics and embodying a nomenclature by which tests and experiments made in one class can be recorded and compared with similar experiments made and recorded in other classes. An outline of a course in color instruction is also given.

Modern Chromatics, or a Text-Book on Color.

Author, Ogden N. Rood, Columbia College. Published by D. Appleton & Co. Size, 7 1-2 in. x 5 in. Pages, 329. Date, 1881. Price, $2.00.

Although an old book it is still a standard authority on Chromatics. It contains many diagrams, tables and applications to art and industry as well as discussions on the theory of color.

Radio-Activity (Cambridge Physical Series).

Author, E. Rutherford, F. R. S. C., McGill Univ. Published by Cambridge University Press. Size, 6 in. x 9 in. Pages, 580. Date, May, 1905. Price, $3.50.

A complete account from a physical standpoint of the properties of naturally radio-active bodies as viewed today. A comprehensive statement of most modern views. Of special interest to the teacher who can make a study of this subject, but it is much beyond the scope of usual secondary instruction.

It contains important chapters on: Nature and Properties of Radiation, Products of Radio-Active Matter, Radio-Active Emanations and Processes, Transformation Products of Radium, Thorium, etc., Rate of Energy, Emission, etc.

SOUND.

Practical Acoustics.

Author, C. L. Barnes, F. C. S. Published by The Macmillan Co. Size, 5 in. x 7 1-4 in. Pages, 214. Date, 1897. Price, $1.10. This is the same as the third vol., part I, of Stewart and Gee's Practical Physics.

This book is very largely a series of laboratory exercises which can be performed by pupils. It is also to some extent a text-book. The experiments are partly quantitative and partly qualitative. The grade of the work is above that usually carried on in secondary schools.

Sound.

Author, Alfred M. Meyer. Published by D. Appleton & Co. Size, 7 1-2 in. x 5 in. Pages, 180. Date, reprint, 1902. Price, $1.00.

This contains a large number of experiments on sound, many of which require only simple apparatus. It is excellent for supplementary work, and of value to both pupil and teacher.

Sound.

Author, John Tyndall. Published by D. Appleton & Co. Size, 5 1-2 in. x 8 in. Pages, 448. Date, 1891, 2d edition. Price, $2.00.

The subject is dealt with thoroughly yet simply, and it is illustrated by descriptions of a great number of experiments, some of them exceedingly striking and fascinating. For extra reading it is one of the classics. About all of the experiments described in it can be reproduced by pupils and some of them will be found among the best yet devised for lecture purposes. At the end of each chapter there is a summary of the contents of the chapter.

ELECTRICITY.

Elementary Electricity and Magnetism.

Author, Dougal C. Jackson, C. E., Univ. of Wisconsin, and John P. Jackson, Penn. State College, M. E. Published by The Macmillan Co. Size, 7 1-2 in. x 5 1-2 in. Pages, 482. Date, 1902. Price, $1.40.

A text-book for manual training schools, high schools, and a manual for artisans and scientific readers. Interesting and also scientifically accurate. Correlates common experiences with knowledge of scientific principles.

A practical book, nearly all of which can be used as extra reading for high school pupils. It contains many fully labelled diagrams and up to date illustrations. At the close of each chapter is a set of practical questions which greatly aids the text. Many of these problems have answers given and in every set some are worked out in detail to aid the solution of other examples. The construction and use of many electrical instruments are fully explained. There is no more valuable single book on electricity published for the home student, or the serious student of Electricity in the high school.

Lessons in Practical Electricity.

Author, C. Walton Swoope. Published by D. Van Nostrand, 23 Murray St., New York. Size, 5 1-2 in. x 8 in. Pages, 462. Date, 7th edition, 1906. Price, $1.90.

An elementary text-book of principles, experiments, and arithmetical problems in Electricity, written primarily for evening school technical classes where pupils must do much of their own study on the text. An intensely practical book. Many every day problems with methods of solution. An admirable first book for a student looking forward to electrical engineering.

Elementary Lessons in Electricity and Magnetism.

Author, Silvanus P. Thompson. Published by The Macmillan Company. Size, 5 1-4 in. x 7 1-2 in. Pages, 636. Date, 1894. (Revised edition.) Price, $1.40 net.

This book gives clearly and in moderate compass the essentials of what is known about electricity. It is valuable to the teacher and as a reference book to the better pupils; there is not enough in it, probably, in regard to popular applications to catch the ordinary pupil, but it is a complete storehouse of knowledge of the laws of electricity and the principles and theories involved in their study. A large part of it would be understood readily by high school pupils, while a portion is a careful quantitative study of modern electrical machines. It contains 297 illustrations and 25 pages of problems.

Standard Electrical Dictionary.

Author, T. O'Conor Sloane. Published by Norman W. Henley & Co., 132 Nassau St., New York. Size, 5 in. x 7 1-2 in. Pages, 682. Date, 1903. Price, $3.00.

A popular handbook of reference, containing 5,000 definitions of words, terms and phrases used in the practice of electrical engineering. Illustrated.

Electrical Engineering.

Authors, W. Slingo and A. Brooker. Published by Longmans, Green & Co. Size, 7 1-2 in. x 5 in. Pages, 814. Date, revised, 1903. Price, $3.50.

The author has written primarily for technical students, and for such a work this contains a minimum of mathematics. It discusses the fundamental conceptions of current and potential electrical methods of measuring electrical functions, methods of producing an electric current, batteries, alternating and direct current dynamos, and the principles of the machines. It devotes chapters to motors, transformers, secondary batteries and electric lighting plants. The style is clear and interesting. Serviceable to teacher and pupil in giving detailed information.

Elementary Electrical Calculations.

Authors, W. H. N. James and D. L. Sands, School of Technology, Manchester, England. Published by Longmans, Green & Co. Size, 5 in. x 7 1-2 in. Pages, 216. Date, 1905. Price, $1.00.

Contents: I Units, II Ohm's Law (a), III Resistance, IV Ohm's Law (b), V Power and Work, VI Conversion of Energy, VII Transmission and Distribution, VIII Electro Chemistry, IX Photometry, Answers to Problems. This book gives a clear statement of electrical units and contains several hundred practical electrical problems, many of them worked out in full and explained. Designed to be a first book for students in electrical engineering, but much of it is adaptable to advanced high school work.

Electrical Measurements.

Authors, Henry S. Carhart, LL.D., and George W. Patterson, Ph.D., Univ. of Michigan. Published by Allyn & Bacon. Size, 5 1-2 in. x 7 1-2 in. Pages, 344. Date, 1895. Price, $2.00.

A book of quantitative work throughout, adapted to college courses and teachers who have a good working knowledge of Trigonometry and calculus. Methods of description, diagrams, and explanations are very clear. Illustrative examples are fully worked out. An excellent book for a progressive teacher.

Electricity in Daily Life.

Authors, several editors. Published by Chas. Scribner's Sons. Size, 8 1-2 in. x 6 in. Pages, 288. Date, 1890. Price, $3.00.

This is a popular and interesting account of the application of electricity to daily uses. It discusses (1) The Development of Electricity, (2) The Electric Motor, (3) The Electric Railway, (4) The Telegraph Systems of Today, (5) Electric Lighting, (6) Making and Laying a Cable, (7) Electricity in Warfare, (8) Electricity in the Household. It is somewhat historical in treatment and contains many illustrations.

Electricity in the Service of Man.

Author, R. Mullineux Walmsley. Published by Cassell & Co., 43 and 45 East 19th Street, New York. Size, 5 3-4 in. x 9 in. Pages, 1,200. Date, revised and enlarged, 1906. Price, $5.00.

A popular treatise on the applications of electricity to modern life. A new and enlarged edition containing nearly 1200 illustrations has been recently issued. This book is intended for general readers and is mostly free from technical terms. The subject is presented under three heads: The Principles of Electrical Science, The Generation and Conduction of Electricity, Practical Applications.

Electricians' Handy Book.

Author, T. O. Sloane, Ph.D. Publisher, Norman W. Henley, New York. Size, 4 1-2 in. x 6 1-2 in. Pages, 761. Date, 1905. Price, $3.50.

A compendium of data covering the entire field of Electrical Engineering. Contains 556 illustrations.

Contains statements of theories, facts, explanations, formulae, definitions. Description of elementary as well as the most complex electrical machinery.

What Is Electricity?

Author, John Trowbridge. Published by D. Appleton & Co. (International Science Series.) Size, 7 1-2 in. x 5 in. Pages, 309. Date, 1896. Price, $1.50.

The author attempts to answer as far as possible in a popular way the question asked in the title. He endeavors to show that electricity can be traced back to the energy of the sun—hence its relation to heat and light. The book discusses continually the doctrine of conservation of energy with reference to all electrical phenomena, and makes clear the transformation of these varieties of energy. The electro-magnetic theory of light is explained. The book is well illustrated by means of diagrams; it is suggestive to a teacher and could be placed in the hands of some pupils with profit.

The Theory of Experimental Electricity.

Author, W. C. D. Whetham. Published by The Macmillan Co. Size, 5 1-2 in. x 8 1-2 in. Pages, 334. Date, 1905. Price, $2.50.

Modern views of electricity are here stated by an authority in very plain, readable language. It contains a minimum of mathematics. Comprehensive enough for the teacher, and also simple enough so that any high school pupil can understand nearly all of it. This covers the entire field of a college course in electricity.

The Discharge of Electricity through Gases.

Author, J. J. Thompson, Univ. of Cambridge. Published by Charles Scribner's Sons. Size, 7 1-2 in. x 5 in. Pages, 203. Date, 1898. Price, $1.00.

This is the outgrowth of four lectures at the University of Princeton delivered on the subject in 1896. It is an admirable compilation and a very satisfactory discussion of a great many essential facts and experimental phenomena in this recent branch of Physics. The main divisions of the book treat with: (1) The Electrification of Gases, (2) Photo Electric Effects, (3) Cathode Rays.

Electricity and Matter.

Author, J. J. Thompson, F. R. S., Cambridge. Publisher, Charles Scribner's Sons. Size, 5 1-2 in. x 8 in. Pages, 162. Date, 1905. Price, $1.25.

Based on a series of lectures (Silliman lectures) given at Yale University in 1903 to discuss recent advances in Electrical Science. A presentation, by the highest authority, of recent views on the constitution of matter and the nature of electricity. An exposition of latest theories in language as little technical as the subject permits. Excellent.

The Electrical Nature of Matter and Radio-Activity.

Author, Harry C. Jones (Johns Hopkins Univ.). Published by D. Van Nostrand Co. Size, 8 in. x 5 1-2 in. Pages, 212. Date, 1906. Price,

A revised reprint of a series of articles appearing in the Electrical Review. The important facts and conclusions concerning the nature of matter are presented in semi-popular but accurate language. Less technical than "Thompson's Conduction of Electricity through Gases" and Rutherford's "Radio-Activity." The Electron Theory, X rays, and various radium emanations are fully and very satisfactorily discussed.

The Electron Theory.

Author, E. E. Fournier, B. Sc. (London). Published by Longmans, Green & Co. Size, 8vo. Pages, 312. Date, 1906. Price, $1.50.

A popular introduction to the new theory of electricity and magnetism. 35 illustrations. Adapted to the non-mathematical reader. All the well-known phenomena of electric charges, potential, current, induction, magnetism, thermo-electricity, etc., are expressed in the language of the new theory.

Radiography and "X" Rays in Practice and Theory.

Author, Bottone. Published by The Macmillan Co. Size, 12mo. Pages, 208. Date, revised, 1906. Price, $1.10.

Well illustrated and has the popular characteristics of the same author's books on Radium, Electrical Instrument Making, etc.

Electric Waves.

Author, Heinrich Hertz. Published by The Macmillan Co. Size, 5 1-2 in. x 9 in. Pages, 278. Date, 1894. Price, $2.50.

This is a reprint of original papers on the researches concerning the propagation of electric waves. It describes the manner in which the investigation was undertaken and the bearing of facts ascertained on electrical theories. It is illustrated and uses considerable calculus. The papers include discussions of rapid electrical oscillations, researches on the character of electric discharges, electric disturbances in insulators, electro-magnetic waves in air and their reflection, the propagation of electric waves by wires. A technical and comprehensive treatise, useful only to teachers.

Things a Boy Should Know about Electricity.

Author, T. M. St. John, M. E. Published by Thomas M. St. John, 407 West 51st Street, New York. Size, 5 in. x 7 1-2 in. Pages, 179. Date, 1903. Price, $1.00.

Tells how various electrical appliances are constructed and how they work. Free from technical language. Contains 260 illustrations. Does not contain experiments nor methods of constructing apparatus, but it explains principles of construction and tells how these principles are applied in common machines.

Electrical Instrument Making for Amateurs.

Author, S. R. Bottone. Published by D. Van Nostrand Co. Size, 5 1-2 in. x 7 in. Pages, 219. Date, 1892, 5th edition. Price, 50 cents.

For the boy interested in making electrical devices, this book gives very good directions for constructing electrical apparatus of all kinds. To follow the directions does not call for expensive tools, the great value of the book being to point out how a great deal may be accomplished with a very moderate equipment.

Electrical Experiments.

Author, S. E. Bonney. Published by The Macmillan Co. Size, 5 1-4 in. x 7 1-4 in. Pages, 243. Date, 1904, revised. Price, 75 cents.

This was designed to be a manual of instructive home amusement. It is an attractive book for an ingenious boy, and is made up of simple directions for easy experiments in static electricity, magnetism, the use of electro-magnets, induction-coils, electrolysis, etc.

Electric Lighting.

Author, Philip Atkinson. Published by D. Van Nostrand. Size, 5 1-2 in. x 7 3-4 in. Pages, 260. 10th edition. Date, 1901. Price, $1.20.

This volume contains a most interesting survey of the entire field covered by the title, written in plain language, devoid of technicalities and perplexing mathematical formulae. It is a good introduction to later more elaborate treatises, and a profitable book to put into the hands of an inquiring boy who has some knowledge of electricity and is interested in its commercial applications. Well illustrated. Electricity a mode of Molecular Motion, Alternate Current Dynamos, Direct Current Dynamos, Electric Units, Electric Measurements, The Arc Lamp, The Incandescent Lamp, The Storage Battery, Electric Distribution are fully discussed.

Electricity and the Electric Telegraph.

Author, G. B. Prescott. Published by D. Appleton & Co. Size, 8 1-2 in. x 5 5-8 in. Pages, Vol. I, 602; Vol. II, 575 and Appendix. 8th Edition, recently enlarged. Price, $7.00.

A complete and clear account of the various forms of telegraphy with descriptions, diagrams and pictures of the instruments used. It contains plenty of mathematics, but is interesting reading to pupils who have judgment in omitting the difficult passages. It is a work of much value if the systems of telegraphy are to be thoughtfully studied; of small value for any other purpose.

The Storage Battery.

Author, Augustus Treadwell. Published by The Macmillan Co. Size, 7 in. x 4 3-4 in. Pages, 257. Date, 1898. Price, $1.75.

This volume deals with the construction, theory, management and uses of all kinds of storage batteries, including computations and tests of efficiency. Illustrated. It is a very complete, readable treatise, easily understood. Somewhat commercial.

A Text-Book on Electro-Magnetism and Construction of Dynamos.

Author, Dugald C. Jackson, C. E. Published by the Macmillan Co. Size, 5 1-2 in. x 7 in. Pages, 289. Date, 1903. Price, $2.00.

A thorough treatise on Dynamos. Too mathematical for pupils. Valuable to one making a mathematical study of dynamos.

Dynamo Electrical Machinery: Its Construction, Design and Operation.

Author, Samuel Sheldon, Brooklyn Polytechnic Institute. Published by D. Van Nostrand & Co. Size, 7 1-2 in. x 5 in. Vol. I, Direct Current Machines. Pages, 275. Date, 1900. Price, $2.50. Vol. II, Alternating Current Machines. Pages, 275. Price, $2.50.

These books are concise and clear and are used as text-books in many technical schools. There are many illustrations and diagrams.

Dynamo-Electric Machinery.

Author, Silvanus P. Thompson, F. R. S. Published by Spon & Chamberlain. Size, 9 in. x 5 1-2 in. Vol. I, Continuous Current Machinery. Pages, 996. Illustrations, 573. Colored plates, 4. Folding plates, 32. Date, 1905. Price, $7.50. Vol. II, Alternating Current Machinery. Pages, 848. Illustrations, 546. Colored plates, 15. Large folding plates, 24. Price, $7.50.

The author deals with the subject historically, constructively and theoretically. He describes in detail the various parts of the generator and the different styles of machines both for direct and alternating currents. He discusses the calculations concerning the efficiency of dynamos and the use of transformers. The volume has numerous plates illustrating different machines. It is a valuable book for teachers' study, but it would be of little use for pupils.

The Management of Electrical Machinery.

Authors, F. B. Crocker and S. S. Wheeler. Published by D. Van Nostrand & Co., 23 Murray Street, New York. Size, 5 in. x 6 1-2 in. Pages, 232. Date, 6th Edition, 1906. Price, $1.00.

This is a practical treatise for engineers and an excellent handbook for any one who has or is likely to have charge of a dynamo or motor. It gives careful directions for examining and testing generators, also the localization and remedy of troubles in all kinds of dynamos and motors.

The Dynamo: Theory, Design and Manipulation.

Authors, C. C. Hawkins and F. Wallis. Publishers, The Macmillan Co. Pages, 925. Date (last edition), 1905. Illustrations, 413. Price, $3.00.

Largely used as a text-book for technical students.

The Principles of Alternate-Current Working.

Author, Alfred Hay. Published by D. Van Nostrand Co., New York. Size, 7 1-2 in. x 4 3-4 in. Pages, 388. Date, 1901. Price, $2.00.

Recommended by Prof. Clifford as the best simple work on the subject. A mathematical introduction gives all necessary mathematical knowledge. An excellent treatment of polyphase currents and the induction motor.

Publications of the General Electrical Co.

Published by General Electrical Co., Schenectady, N. Y. Size, 8 in. x 5 1-4 in. Pages, 50-60. Date, at intervals.

These are specific instructions for setting up, running and maintaining the various types of machines put on the market by this company. The diagrams and descriptions are very clear, and help much in getting a definite notion of the wiring and construction of modern electrical generating plants. Only to be obtained by courtesy of the company.

Maxwell's Theory and Wireless Telegraphy.

Authors, J. H. Poincare. Translated by F. K. Vreeland. Published by McGraw Publishing Company, 114 Liberty Street, New York. Pages, 247. Date, 1904. Price, $2.00.

A physical treatment of Maxwell's theory of electrical transmission, and its application to some modern electrical problems. A discussion of Hertzian oscillations and the essential features of wireless telegraphy. Mathematics and abstruse reasoning are avoided in order to establish a clear picture of the fundamental theories.

"A very clear non-technical discussion of the theory and principles of the subject."—Prof. Cross.

LIBRARY OF THE UNIVERSITY OF CALIFORNIA

Wireless Telegraphy and Telephony.

Author, D. Mazzotto. Translator, S. R. Bottone. Published by Whittaker & Co., 64-66 Fifth Avenue, New York. Size, 8 1-2 in. x 5 1-4 in. Pages, 416. Date, 1906. Price, $2.00.

This book presents in the simplest possible language the principles of wireless telegraphy and follows step by step the progress realized by the different inventors from Marconi at Bologna down to the latest (1906) results of transatlantic radiophony. A few chapters are devoted to wireless telegraphy by conduction, by induction, by the radiophonic and radiation systems, but the larger part of the book is devoted to telegraphy by electric waves, radio-telegraphic apparatus, and the development of the various systems of radio-telegraphy. It contains 253 illustrations.

A Century of Electricity.

Author, T. C. Mendenhall. Published by Houghton, Mifflin & Co. Size, 7 in. x 4 1-4 in. Pages, 240. Date, 1890. Price, $1.25.

This is a sketch of the growth of the science of electricity and its principal applications. Not a scientific treatise nor a history of the science, but a readable sketch of the fundamental principles involved in the electrical devices of today.

The Age of Electricity.

Author, Park Benjamin. Published by Charles Scribner's Sons. Size, 12mo. Pages, 381. Date, 1886. Price, $2.00.

The subject is treated from a historical standpoint. It is largely illustrated, and is not in any sense a technical or professional treatise. The leading principles of electricity and their application are presented in a popular readable way. It uses few technical terms and no electrical measurements.

LABORATORY WORK.

A Manual of Experiments in Physics.

Authors, J. S. Ames and W. J. A. Bliss, Johns Hopkins University. Published by American Book Company. Size, 8vo., 5 1-2 in. x 8 1-2 in. Pages, 544. Date, 1898. Price, $1.80.

This book contains 91 experiments, well distributed among the divisions of general physics, chapters on Laboratory Equipment, Laboratory Receipts and Methods and Galvonometers, 30 tables of constants, tables of logarithms, natural sines, cosines and tangents. Only quantitative experiments are described. Each experiment is treated in even parts: (1) Object of the experiment in a single paragraph; (2) general theory, a brief statement of the theory and the physical laws involved; (3) sources of error discussed and the most important difficulties with the necessary precautions are pointed out; (4) a list of apparatus to be used, with a brief description; (5) manipulation, a full statement of details with explicit directions; (6) illustrations, the result of actual experiments performed in the manner described, and intended to serve as a guide in making reports and to show practically how accurate the experimental methods are; (7) questions and problems. The work outlined in this book is intended for college students, but the methods of presentation and many of the experiments themselves make it a very suggestive and valuable book of reference for the teacher in planning his laboratory work.

Laboratory Physics.

Author, Dayton C. Miller, D. Sc. Published by Ginn & Co. Size, 6 in. x 8 1-4 in. Pages, 403. Date, 1903. Price, $2.00.

A students' manual for performance of experimental problems in Physics, adapted to the general courses in colleges and technical schools. While much of the work calls for better apparatus and more skill than is found in the usual high school course, it is an inspiration for the teacher's individual investigation, and many portions can well be adapted to the work of advanced high school pupils. The experimental directions are very clear and the book contains a valuable statistical appendix.

A Laboratory Manual of Physics, and Applied Electricity.

Editor, Edward L. Nichols. Published by The Macmillan Co. Size, 6 in. x 9 in. Pages, Vol. 1, 294; Vol. II, 444. Date, 1894. Price, Vol. I, $3.00; Vol. II, $3.25.

Vol. 1, Junior Course in General Physics, is intended for beginners in college work. It affords explicit directions, together with demonstrations and occasional elementary statements of principles. The subjects by groups in order of consideration are: Length, Time and Mass; Density; Properties of Gases; Calorimetry; Static Electricity; Magnetism; Electric Currents; Difference of Potential and E. M. F.; Measurement of Resistance; Electrical Quantity; Electro-magnetic Induction; Sound; Lenses and Mirrors; The Spectroscope and Photometer. The book contains a table of logarithms and also excellent tables of physical constants introduced in the text. 108 diagrams. Vol. II includes 53 experiments with direct current apparatus, 64 experiments with alternating currents, 19 experiments in photometry and heat. These volumes are good books of reference for teachers' use.

A Laboratory Course in Physical Measurements.

Author, Wallace Clement Sabine. Published by Ginn & Co., Boston. Size, 6 in. x 8 1-2 in. Pages, 97. Date, Revised edition, 1906. Price, $1.25.

A Physical Laboratory Manual written primarily for use in "Physics C," at Harvard College. The book is a condensed outline of a course of quantitative experiments on the subjects of Mechanics, Sound, Light, Magnetism and Electricity, with an appendix containing chapters on Significant Figures, Graphical Representation of Results and Tables. This course is intended for students who have taken the equivalent of the work outlined in Hall & Bergen's Text-Book of Physics, and may be successfully used as the basis of an advanced course in physics in secondary schools. The subjects for experiments are carefully selected, presented clearly, and require good but not very expensive apparatus. A knowledge of algebra, geometry and the notation of trigonometry is necessary.

Lessons in Elementary Practical Physics.

Authors, Stewart & Gee. Published by The Macmillan Co. Three vols.: I, General Physical Processes; II, Electricity and Magnetism; III, Acoustics. Size, 7 1-4 in. x 5 in. Pages, Vol. I, 291; Vol. II, 497; Vol. III, 212. Date, 1897. Price, Vol. 1, $1.50; Vol. II, $2.25; Vol. III, $1.10.

A very complete, well illustrated description of a large number of experiments in Physical Measurements. The instructions are plain and complete, and considerable descriptive matter is added. It contains the descriptions of the methods, and pictures of the apparatus used in the accurate work of which the usual secondary school course is an illustration. Contains many useful tables. The instruction should be intelligible to any secondary school pupil.

Physical Measurements.

Author, Harold Whiting, Ph.D., Harvard Univ. Published by D. C. Heath & Co. Size, 6 in. x 8 1-2 in. Pages, 1,226. Date, 1891. Price, $1.20 per part; $3.75 bound in one volume.

This is published in four parts, which can be purchased separately. Part I, Measurements Relating to Density, Heat, Light and Sound. Part II, Measurements Relating to Sound, Dynamics, Magnetism and Electricity. Part III, Principles and Methods, Mathematical and Physical Tables. Part IV, Appendix for Use of Teachers. This is largely the source of the famous Harvard Forty Experiments. It is an inexhaustible well of information concerning quantitative experimental physics, an encyclopedia upon topics relating to physical laboratory work, and a most valuable helper of laboratory instructors following the Harvard plan. Much of the work as given is too hard for secondary schools.

Practical Measurements in Magnetism and Electricity.

Author, George A. Hoadley, C. E. Published by American Book Co. Size, 5 in. x 7 1-2 in. Pages, 111. Date, 1904. Price, 75 cents.

An admirable experimental course for students in advanced courses in high school and manual training school. It contains some descriptive text and 89 well planned experiments. Directions are given in outline rather than in minute detail, so that thought is necessary as well as manipulation.

Practical Exercises in Magnetism and Electricity.

Author, H. E. Hadley, B. Sc., London. Published by The Macmillan Co. Size, 5 in. x 7 in. Pages, 231. Date, 1901. Price, 60 cents.

A laboratory course with descriptive text, designed for secondary scientific schools of England. It calls for simple apparatus only. Of special value to advanced high school pupils, and as a source of supplementary work for general courses. Mathematics mostly elementary.

Physico-Chemical Methods.

Author, Traube. Published by P. Blakiston's Son & Co., Philadelphia. Size, 6 in. x 9 in. Pages, 238. Date, 1898. Price, $1.50.

Illustrated. An excellent account of modern methods. Language simple. Contains tables of physical constants.

TABLES.

C. G. S. System of Units.

Author, J. D. Everett. Published by The Macmillan Co. Size, 7 in. x 5 in. Pages, 220. Date, 1902, revised edition. Price, $1.25.

This volume contains a concise and clear statement of the general theory of units, and also a collection of results of all the reliable investigations up to date, 1891, in all cases giving the authority from which the figures are taken with references to original sources.

Mathematical and Physical Tables.

Author, Harold Whiting. Published by D. C. Heath & Co. Size, 6 in. x 8 in. Pages, 100. Date, 1891. Price, 50 cents.

The tables by groups are: (1) Mathematical, 15 tables, including Trigonometric Functions, Squares, Cubes, Reciprocals, Geometrical Functions of Circles and Spheres, Logarithmic Tables; (2) General Properties of Solids, Liquids and Gases, 6 tables; (3) Hygrometric and Barometric, 20 tables; (4) Reduction of Weighings to a Vacuo, 4 tables; (5) Specific Volumes and Densities, 7 tables; (6) Properties of Solutions, 10 tables; (7) Miscellaneous Data, 9 tables; (8) E. M. F. and Resistance, 6 tables; (9) Arbitrary Scales, Temperature, Pitch, Wire Gauge, etc., 6 tables; (10) Astronomical and Geographical Data, 12 tables; (11) Reduction of Measures to and from the C. G. S. System, 2 tables; (12) Constants frequently used. Almost every constant that is ever required may be found in these tables. The sources of authority are not always the latest, but except in special cases that might occur, are sufficiently reliable.

Computation, Rules and Logarithms.

Author, Silas W. Holman. Published by The Macmillan Co. Size, 9 in. x 6 in. Pages, 77. Date, 1896. Price, $1.00.

Rules governing number of significant figures in computing results. Tables of four place logarithms, anti-logarithms, and co-logarithms. Tables of five place logarithms, square roots and squares, trigonometrical functions and physical constants. The best discussion of the whole matter.

Smithsonian Physical Tables.

Author, Thomas Gray, Rose Polytechnic Institute. Published by Smithsonian Institute, Washington, D. C. Size, 6 1-2 in. x 9 1-2 in. Pages, 301. Date, 4th edition, 1904. Price, $2.00. Bound.

A most complete set of Tables of Physical Constants. Invaluable to one engaged in quantitative work in physics, to one designing new apparatus and experiments, and to one engaged in research of any kind within the field of physics or of chemistry.

Examples in Physics.

Author, D. E. Jones. Published by The Macmillan Co. Size, 6 1-2 in. x 4 in. Pages, 348. Date, 1903, Revised edition. Price, 90 cents.

Contains more than 1000 problems in the various branches of physics. Well adapted to secondary school work. With answers.

Problems in Elementary Physics.

Author, E. Dana Pierce. Published by H. Holt & Co. Size, 7 1-2 in. x 4 3-4 in. Pages, 194. Date, 1896. Price, 60 cents.

A book of problems in physics designed for secondary schools. Preliminary explanations. Some algebra and geometry necessary. 41 problems devoted to elasticity, 200 to fluids; 118 to solids, 160 to motion, 110 to heat, 64 to sound, 150 to light, 200 to magnetism, and 200 to electricity.

One Thousand Problems in Physics.

Authors, W. H. Snyder, A. M., and I. O. Palmer, A. M. Published by Ginn & Co. Size, 7 1-4 in. x 5 in. Pages, 142. Date, 1900. Price, 50 cents.

The best secondary school problem book in Physics issued. It contains a large number of problems well graded and classified. Especially well adapted to classes preparing for the Harvard examinations. It contains valuable tables and college entrance papers.

Notes and Questions in Physics.

Author, John Shearer, Ph.D., Cornell Univ. Published by The Macmillan Company. Size, 5 3-4 in. x 8 3-4 in. Pages, 284. Date, 1904. Price, $1.60.

This book contains 1500 problems, mostly within the range of high school pupils. The problems are of all grades of difficulty, and seem well chosen and well expressed. There are many valuable tables, including tables of densities, specific heat, melting-points, boiling-points, coefficients of expansion (linear and cubical), indices of refraction, etc. There are many diagrams and explanations with some brief text. Graphic methods are emphasized. A very valuable book, especially for teachers.

HISTORICAL.

A History of Physics in Its Elementary Branches.

Author, Florian Cajori. Published by The Macmillan Co. Size, 6 in. x 8 1-4 in. Pages, 322. Date, 1899. Price, $1.60.

The author deals with the contributions made to the knowledge of physical laws by the Greeks, Romans, and Arabs; the progress during the Middle Ages and the period of the Renaissance as well as during each succeeding century. Each department of Physics is treated separately in the several periods. The writer's style is attractive and systematic. About twenty pages are devoted to the Evolution of Physical Laboratories. The book is not of great value for the majority of secondary school pupils but for the brighter boys of an investigating tendency. Teachers will find the book interesting and helpful.

A History of Electricity.

Author, Park Benjamin. Published by John Wiley & Sons, New York. Size, 6 1-2 in. x 9 in. Pages, 611. Date, 1898. Price, $3.00.

This is a complete history of all that is known of magnetism and electricity from antiquity to the days of Benjamin Franklin. The early myths concerning magnetic rocks, amber, the compass and all that is known of its discovery are related at length and in a very interesting manner. The early investigations concerning frictional electricity are freely described. There are 27 illustrations in the text, mostly reproduced from the old books of the original investigators and full page engravings of Gilbert, Von Guericke and Franklin.

A Short History of Natural Science.

Author, Arabella Buckley. Published by D. Appleton & Co. Size, 8 in. x 5 in. Pages, 467. Price, $2.00.

This volume contains interesting sketches of the great scientists and their work from the time of the Greeks to the present. It is fairly illustrated and always clear. Not too simple for pupils and never difficult. It seems to be fair and gives a very good idea of the growth of scientific knowledge and of accurate methods of investigation. A good book for pupils in any branch of science.

The Story of Nineteenth Century Science.

Author, Henry Smith Williams. Publisher, Harper & Bros. Pages, 475. Date, 1901. Price, $2.50.

This gives a summary of the development of science during the most interesting century in its progress. The chapters which have a bearing on Physics are: "Science at the Beginning of the Century," "The Century's Progress in Physics," "The Imponderables," "Ether and Ponderable Matter," "Some Unsolved Problems," "Physical Problems."

The Progress of Invention in the Nineteenth Century.

Author, Edward W. Byrn, A. M. Publisher, Munn & Co. Size, 9 1-2 in. x 7 in. Pages, 476. Date, 1900. Price, $3.00.

Contains 306 illustrations. A popular readable book containing a comprehensive account of the industrial development of today. A chronological calendar of the leading inventions is an important feature.

Rise and Development of Liquefaction of Gases.

Author, Willet L. Hardin, Ph.D. Published by The Macmillan Co. Size, 7 1-2 in. x 5 1-2 in. Pages, 250. Date, 1899. Price, $1.50.

Historical in character, this gives a complete description of the methods used in the liquefaction of gases. Sufficient theory is presented to give an understanding of the principles involved. Written in popular science style, with little mathematics. Illustrated. Interesting for pupils and teachers and fully up to date. Dewar and Tripler's methods discussed, also the Liquefaction of Hydrogen, Fluorine, Argon, etc.

Physical Papers.

Author, Henry A. Rowland. Published by the Johns Hopkins Press, Baltimore. Pages, 704. Date, 1902. Price, $7.50.

Covers many subjects. Contains a cut and description of the famous dividing engine.

The Recent Developments of Physical Science.

Author, William C. D. Whetham, Cambridge Univ. Published by P. Blakiston's Son & Co. Size, 6 in. x 8 in. Pages, 344. Date, 1904. Price, $2.00.

An account of the important investigations now being carried on in the laboratories of the world, written mostly without technical language for students having very little scientific training. It contains chapters on: "Liquefaction of Gases and the Absolute Zero," "Fusion," "Problems of Solution," "Conduction of Electricity through Gases," "Radio-Activity," "Atoms and Ether," "Astrophysics." Several portraits.

Annual Report of the Smithsonian Institute.

Published by the Government Printing Office. Size, 9 in. x 6 in. Pages, about 800. Bound in cloth or paper, as you prefer. Obtainable free through Congressmen or Senators

Contains reprints of scientific articles from Europe and America. Numerous illustrations.

Boys' Book of Inventions and Boys' Second Book of Inventions.

Author, Ray Stannard Baker. Published by McClure, Phillips & Co., New York. Size, 8 in. x 6 in. Pages, 320. Date, 1903. Price, each, $2.00.

A very interesting and popular description of great modern inventions. A typical boys' book fully illustrated. The second book contains chapters on: "The Miracle of Radium," "Flying Machines," "John Milne's Seismograph," "Electric Furnaces," "Harnessing the Sun," "The Inventor and the Food Problem," "Marconi's Achievements," "Sea Builders," "The Newest Electric Light."

Children's Stories of the Great Scientists.

Author, Henrietta C. Wright. Published by Charles Scribner's Sons. Size, 7 1-2 in. x 4 3-4 in. Pages, 350. Date, 1895. Price, 50 cents.

Sketches of the lives of eminent men of science, among them Galileo, Newton, Franklin, Rumford, Faraday, Tyndall, Kirchoff. Interwoven with the biography is some account of the great discoveries which have made these men famous. Readable, accurate and illustrated by portraits. If the history of Physics is to be taught this book is valuable to both pupils and teachers.

Inventors.

(Men of Achievement Series.) Author, Philip G. Hubert. Published by Chas. Scribner's Sons. Size, 6 in. x 8 1-4 in. Pages, 299. Date, 1896. Price, $1.50.

This contains excellent histories of lives and works of Whitney, Franklin, Howe, Morse, Goodyear, Edison, Bell and other inventors. It is well illustrated with portraits and pictures.

Michael Faraday.

Author, Silvanus P. Thompson. Published by The Macmillan Co. Size, 5 in. x 7 1-2 in. Pages, 299. Date, 1898. Price, $1.25.

An exceedingly interesting biography devoted very largely to Faraday's Scientific Researches and his views on questions of sciences and education.

Galileo.

Author, J. J. Fahie. Published by James Pott & Co., New York. Size, 6 in. x 9 in. Pages, 451. Date, 1903. Price, $3.50.

A very interesting narrative of the life and work of Galileo. It gives a clear picture of the science of his time and the difficulties under which he tried to promulgate scientific truth. Well illustrated.

James Clark Maxwell and Modern Physics.

Author, R. T. Glazebrook, M. A., F. R. S. Published by The Macmillan Co. Size, 5 in. x 7 1-2 in. Pages, 224. Date, 1895. Price, $1.25.

An interesting biography devoted largely to Maxwell's Researches in Physics and the discussion of theories which he advocated,—Maxwell's Studies in Color Perception,—Theories of Molecular Physics,—and Electrical Theories are emphasized.

James Watt.

Author, Andrew Carnegie. Publisher, Doubleday, Page & Co. Size, 6 in. x 9 in. Pages, 241. Date, 1905.

An interesting narrative of Watt's life.

Science and Education.

Author, Thomas H. Huxley. Published by P. F. Collier & Son, New York. Pages, 381. Date, 1902. Price, $1.00.

A valuable series of essays on the relation of physical and biological education to life.

The Teaching of Chemistry and Physics in the Secondary School.

Authors, Alexander Smith, Univ. of Chicago, and Edwin H. Hall, Harvard Univ. Published by Longmans, Green & Co. Size, 8 in. x 5 1-4 in. Pages on Chemistry, 225; on Physics, 140. Date, 1902. Price, $1.50.

This is purely a teachers' book, it is one of several constituting the American Teachers' Series. It is intended to be a book of helpful suggestions to the secondary teacher either in the department of Physics or Chemistry. The whole question of the relation of laboratory work to science instruction is fully discussed. Important chapters deal with the plans and equipment of laboratories, the teacher's own training for his work, the technique of laboratory management, the proper use of lectures and recitations, physics teaching in other countries.

Transactions of the International Electrical Congress Held at St. Louis, 1904.

Published by the General Secretary of the Electrical Congress. Vol. I, 9 1-2 in. x 6 in. Pages, 879.

Vol. I includes the valuable papers and discussions on recent theories of Electricity and their general applications. Invaluable to any one making a thorough study of the trend of modern electrical investigation. Very interesting to a teacher with some engineering knowledge; of little value to a secondary school student. Vols. II and III are less valuable.

TECHNICS.

Glass Blowing and Working.

Author, Thomas Bolas. Published by John Lane Co., 67 Fifth Avenue, New York. Size, 6 in. x 8 in. Pages, 209. Date, 1898. Price, $1.00.

Useful to the teacher who desires to construct glass apparatus.

Electro-Plating.

Author, Paul H. Hasluck. Published by David McKay, 610 South Washington Street, Philadelphia. Size, 4 in. x 7 in. Pages, 157. Date, 1905. Price, 50 cents.

A very simple handbook, easily understood by anyone. Concise information on all the details of apparatus necessary and the methods employed in silver, copper, gold and nickel plating.

Home-Made Apparatus.

Author, John F. Woodhull, Ph.D. Published by A. S. Barnes & Co. Size, 5 in. x 7 1-2 in. Pages, 100. Date, 1906. Price, 65 cents.

Almost every principle in physics illustrated by experiments performed with material found in the home, together with a few test tubes, one or two flasks, glass tubing and copper wire.

The Art of Projecting.

Author, A. E. Dolbear. Published by Lothrop, Lee & Shepard Co. Size, 5 3-4 in. x 8 in. Pages, 178. Date, 1892. Price, $2.00.

Instructions are given for setting up and operating portelumieres and artificial lights. Also instructions for preparing and performing a large number of experiments illustrating physical phenomena, in such a way that they may be projected upon the screen. By this means pupils in large classes can be instructed and interested by many experiments which would otherwise be invisible to all except a few nearest the lecture table.

Optical Projection.

Author, Lewis Wright. Published by Longmans, Green & Co. Size, 5 in. x 7 1-4 in. Pages, 438. Date, 1890. Price, $2.25.

A complete treatise on the use of the lantern in exhibition and scientific demonstration, with 232 illustrations. It is very full of useful and practical detail.

Photography for Students of Physics and Chemistry.

Author, Louis Derr, M. A. (Mass. Inst. Tech.). Published by The Macmillan Co. Size, 5 1-2 in. x 7 3-4 in. Pages, 247. Date, 1906. Price, $1.40.

A valuable book for the high school library. It is not merely a handbook of photographic manipulation, but an explanation of photographic processes as to their nature and purposes. Clear, practical and not technical.

Lantern Slides. How to Make Them.

This is No. 9 of the Photo Miniature Series. Published by Tennant & Ward, New York. Price, 25 cents, in paper covers. Sold by photographic dealers.

The Photo Miniature is a monthly magazine, each number devoted to some one phase of photographic work. This is a simple and practical manual.

TEXT - BOOKS.

Elements of Physics.

Authors, E. J. Andrews and H. N. Howland, Chicago High Schools. Published by The Macmillan Co. Size, 5 1-2 in. x 7 3-4 in. Pages, 439. Date, 1903. Price, $1.10.

A text-book with experimental appendix. It aims to make prominent the practical bearings of physics.

School Physics.

Author, Elroy M. Avery, Ph.D. Published by Sheldon & Co. Size, 5 1-2 in. x 8 in. Pages, 608. Date, revised, 1903. Price, $1.25.

Many years of practical use have proven its value. Characterized by clearness of definition and much problem work.

High School Physics.

Authors, H. S. Carhart and H. N. Chute. Published by Allyn & Bacon. Size, 7 1-2 in. x 5 1-2 in. Pages, 433. Date, 1901. Price, $1.25.

One of the most practical and widely used text-books now on the market. Adapted for second year classes.

Physics: Theoretical and Descriptive.

Authors, Henry C. Cheston, Ph.D., J. Stewart Gibson, Ph.D., Charles E. Timmerman, M. M. E. Published by D. C. Heath & Co. Size, 7 1-2 in. x 5 1-2 in. Pages, 373. Date, 1906. Price, $1.25.

Strictly a text-book. This contains concise statements and discussions of all important physical principles. It calls for the use of a separate laboratory manual, but supplies that which the laboratory work can not furnish. Many practical problems. Fully reviewed by Mr. A. B. Kimball in the report of the October (1906) meeting of the Eastern Association of Physics Teachers.

Elements of Physics.

Author, S. C. Coleman, S. B. (Oakland, Cal.). Published by D. C. Heath & Co. Pages, 439. Size, 7 1-2 in. x 5 1-2 in. Date, 1906. Price, $1.25.

This is intended as a text for a first course in physics, and is designed to be used with the author's Physical Laboratory Manual, published by the American Book Co. It attempts to present simply the principles of physics with a large amount of information drawn from daily life illustrative of physical principles. Mathematical problems few.

The Elements of Physics.

Author, Henry Crew, Ph.D. Published by The Macmillan Co. Size, 7 1-2 in. x 5 1-4 in. Pages, 353. Date, 1899. Price, $1.10.

Text-Book of Physics.

Author, J. A. Culler, Ph.D., Miami University. Published by J. P. Lippincott Co. Size, 5 1-4 in. x 7 3-4 in. Pages, 420. Date, 1906. Price, $1.25.

A good secondary school text-book, containing many diagrams and problems. Fully reviewed by Mr. Cowen in the report of the October (1906) meeting of the Eastern Association of Physics Teachers.

First Principles of Natural Philosophy.

Author, A. E. Dolbear. Published by Ginn & Co. Size, 7 1-2 in. x 5 in. Pages, 318. Date, 1897. Price, $1.00.

This is a brief and unique treatment of the fundamental principles of the subject. Phenomena are explained by reference to molecular action and ether waves.

Elements of Physics.

Authors, A. T. Fisher, B. S., and M. J. Patterson, B. S. Published by D. C. Heath & Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 180. Date, 1902. Price, 60 cents.

A very elementary book suitable for grammar school classes or first year classes in the high school. An admirable book for its purpose. It contains some elementary experiments.

Principles of Physics.

Author, Frank M. Gilley. Published by Allyn & Bacon. Size, 5 1-2 in. x 7 3-4 in. Pages, 552. Date, 1901. Price, $1.30.

A clear, vigorous presentation of the important principles of the science. The treatment of electricity is especially good.

A Text-Book of Physics.

Authors, Edwin H. Hall, Ph.D., and J. Y. Bergen, A. M. Published by Henry Holt & Co. Size, 7 1-2 in. x 5 1-4 in. Pages, 558. Date, revised edition, 1903. Price, $1.25.

Written with special reference to the requirement in elementary experimental physics for admission to Harvard College. Contains experiments with descriptive text.

Lessons in Physics.

Author, Lothrop D. Higgins. Published by Ginn & Co. Size, 5 in. x 7 1-2 in. Pages, 372. Date, 1903. Price, 90 cents.

A familiar description of physical phenomena seen in daily experiences. It is well adapted to the first year in the high school.

Brief Course in General Physics.

Author, George A. Hoadley, C. E. Published by American Book Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 463. Date, 1900. Price, $1.20.

One of the best general text-books for first or second year high school classes.

Physics.

Authors, Charles R. Mann and George R. Twiss. Published by Scott, Foresman & Co., 378 Wabash Avenue, Chicago. Size, 5 1-2 in. x 8 in. Pages, 453. Date, 1905. Price, $1.25.

This contains many half-tone illustrations of familiar appliances. It emphasizes the practical side of physics, and seeks to popularize the subject by drawing upon the pupil's personal experiences. The style and arrangement are somewhat unusual.

Elementary Physics.

Authors, F. W. Miller and A. F. Foerste. Published by Chas. Scribner's Sons. Size, 5 1-2 in. x 8 in. Pages, 413. Date, 1903. Price, $1.25.

Unusual arrangement. Mechanics is placed at the end of the course. A considerable amount of physical chemistry is included. Molecular, atomic and ether theories are prominently presented.

Forty Lessons in Physics.

Author, Lynn B. McMullen, Indianapolis. Published by H. Holt & Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 452. Date, 1906. Price, $1.25.

This book is planned for the class room, not the laboratory. Principles are discussed as simply as possible. Life and interest are well maintained. Theory, principles and discussions are printed on the left hand pages. Illustrations and diagrams on the right. Fully reviewed by Mr. F. R. Miller in the report of the E. A. P. T. meeting of October, 1906.

First Course in Physics.

Authors, Robert A. Millikan, Ph.D., and Henry G. Gale, Univ. of Chicago. Published by Ginn & Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 487. Date, 1906. Price, $1.25.

One of the latest and best books,—comprehensive, well illustrated and up to date. Fully reviewed by Mr. N. H. Black in the report of the Eastern Association of Physics Teachers' Meeting of Oct. 27, 1906.

The Outlines of Physics.

Author, Edward L. Nichols, of Cornell University. Published by The Macmillan Co. Size, 5 1-4 in. x 7 1-2 in. Pages, 452. Date, 1897. Price, $1.40.

This is a combined classbook and laboratory manual. It ranks well as a high school text-book for advanced classes. Illustrations are largely diagrammatic in their character. The experiments are mostly quantitative.

Physics.

Author, Frederick Slate. Published by The Macmillan Co. Size, 5 1-2 in. x 7 3-4 in. Pages, 414. Date, 1902. Price, $1.10.

This is a treatise on physics rather than a text-book. It contains fifty pages of experimental suggestions at the end.

A Text-Book of Physics.

Authors, G. A. Wentworth, A. M., and G. A. Hill, A. M. Published by Ginn & Co. Size, 5 1-4 in. x 7 1-2 in. Pages, 464. Date, revised, 1905. Price, $1.15..

This has been a standard book for several years. It is strong in problems and class room exercises. The revision brings it up to date. It is essentially a book of the principles of physics rather than an explanation of the application of these principles.

A Laboratory Course in Physics.

Authors, R. A. Millikan, Ph.D., and H. G. Gale. Published by Ginn & Co. Size, 5 in. x 7 1-2 in. Pages, 134. Date, 1906. Price, 40 cents.

This is designed to accompany the author's "First Course in Physics." It contains fifty-one exercises both qualitative and quantitative in character. Arranged by subjects, without regard to difficulty.

Elements of Physics.

Author, Fernando Sanford, Leland Stanford Junior Univ. Published by H. Holt & Co. Size, 5 1-4 in. x 7 1-2 in. Pages, 426. Date, 1902. Price, $1.20.

A combined laboratory and text-book for high schools. It differs much from the usual text-book. Bases mechanics on the energy concept from the beginning. It treats optics without reference to rectilinear propagation. Lecture room methods are discouraged; the laboratory made essential.

Manual of Experimental Physics.

Authors, F. R. Nichols, C. H. Smith, and C. M. Turton. Published by Ginn & Co. Size, 5 1-2 in. x 7 1-2 in. Pages, 314. Date, 1899. Price, $1.00.

A complete laboratory manual. The experiments are mostly quantitative. Used in the Chicago schools.

Physical Laboratory Manual.

Author, S. E. Coleman, A. M. Published by American Book Co. Size, 5 1-4 in. x 7 1-2 in. Pages, 234. Date, 1903. Price, 60 cents.

A very satisfactory manual for the average high school. It contains seventy-seven (77) exercises and avoids elaborate apparatus. It presents valuable preliminary laboratory suggestions. The directions are clearly stated. It contemplates the constant use of a text-book, such as the Hoadley, Carhart & Chute, or similar text, and encourages independent thought.

Laboratory Manual of Physics.

Authors, H. C. Chesterton, P. R. Dean, C. E. Timmerman, High Schools, New York. Published by American Book Co. Size, 5 in. x 7 1-2 in. Pages, 128. Date, 1903. Price, 50 cents.

Aims to illustrate experimentally the essential principles. It contains 73 very practical exercises. All non-essential material omitted, giving a very comprehensive course in concise form. One of the best manuals published.

Physical Laboratory Manual for Secondary Schools.

Author, Charles F. Adams of Detroit High School. Published by American Book Company. Size, 5 1-2 in. x 7 7-8 in. Pages, 183. Date, 1896. Price, 75 cents.

The introduction is suggestive as to the management of laboratory work and the handling of data. The exercises are clearly stated and a tabular form of recording results is given in each case. The volume is illustrated by clear, effective cuts. An appendix describes the manufacture of simple apparatus.

Elementary Laboratory Physics.

Author, C. R. Allen. Published by Henry Holt & Co. Size, 7 1-2 in. x 5 in. Pages, 277. Date, 1895. Price, $1.00.

A laboratory manual for secondary schools containing mostly quantitative work. The author has aimed to present simple and practical exercises. Nearly every exercise is preceded by a preliminary discussion of the principles involved. Inductive in method and well suited to give pupils needed assistance both in preparing for the experiments and in the subsequent computation of data. The teachers' edition contains valuable appendices on laboratory manipulation and construction of simple apparatus.

A Laboratory Course in Experimental Physics.

Author, W. J. Loudon, B. A. (Univ. of Toronto), and J. C. McLennan, B. A. Published by The Macmillan Co. Size, 6 in. x 9 in. Pages, 302. Date, 1895. Price, $1.90.

An interesting course in advanced laboratory work. A part of it is within the grasp of high school pupils, but the larger part is rather too difficult for secondary schools.

PUBLISHERS OF SCIENTIFIC BOOKS.

This list gives the addresses of the more important publishers of American Scientific Books.

Allyn & Bacon, 172 Tremont St., Boston.

American Book Company, 93 Summer St., Boston.

D. Appleton & Company, 120 Boylston St., Boston.

A. S. Barnes & Company, 156 Fifth Ave., New York.

P. Blakiston's Son & Co., 1012 Walnut St., Philadelphia.

Publishers of Chemical and Physico-Chemical works.

Cassell & Company, 43 East 19th St., New York.

Ginn & Company, 29 Beacon St., Boston.

Publish mostly school text-books by following authors:—Gage, Higgins, Hastings and Beach, Millikan and Gale, Nichols, Smith and Turton, Risteen, Sabine, Snyder and Palmer, Wentworth and Hill.

Harper & Brothers, Franklin Sq., New York.

D. C. Heath & Co., 120 Boylston St., Boston.

Norman W. Henley Pub. Co., 132 Nassau St., New York.

Valuable Catalogue of Selected Books on Electricity, Machinery, Gas Engines, Mechanics, Liquid Air, etc. Publish and act as selling agents for many popular scientific books.

Some popular books:

Sloane's Arithmetic of Electricity, 165 pp.....$1.00
Sloane's Electric Toy Making, 185 pp.....1.00
Sloane's Standard Electrical Dictionary.....3.00
Hiscox's Gas, Gasolene and Oil Engines, 413 pp.....2.50

Henry Holt & Co., { 29 West 23d St., New York. 128*a* Tremont St., Boston.

Pub. McMullen's "Forty Lessons in Physics," Barker's Physics, Hall and Bergen's Physics, Pierce's "Problems of Physics," Sanford's "Elements of Physics."

Houghton, Mifflin & Co., 4 Park St., Boston.

Longmans, Green & Co., { 91 and 93 Fifth Ave., New York 120 Boylston St., Boston.

Publish many books on advanced departments of Physics. See their special catalogue of works on Science.

Lothrop, Lee & Shepard Co., 93 Federal St., Boston.

The Macmillan Company, { 64 Fifth Ave., New York. / 120 Boylston St., Boston.

Publish about 200 books in various departments of Physics. Valuable catalogue free.

McGraw Publishing Company, 114 Liberty St., New York.

Publish many books in all departments of Engineering. Catalogue free.

Munn & Company (Scientific American Office), 361 Broadway, New York.

Valuable catalogue of Scientific, Industrial and Technical Books. Free.

Some important publications are:

Sloane's Electrical Handy Book	$3.50
A Complete Electrical Library	5.00
Electric Wiring, etc	1.50
Progress of Invention, 19th Century	4.00
Home Mechanics for Amateurs	1.50
Experimental Science, Hopkins	5.00
Compressed Air, Uses and Applications	5.00

Their cheap handicraft series at 50 cts. includes:

Dynamos.
Glass Working by Heat.
Electric Bells.
Photography.
Optical Lantern, etc.

D. Van Nostrand & Co., 23 Murray St., New York.

Charles Scribner's Sons, 153-157 Fifth Ave., New York.

Spon & Chamberlain, 123-125 Liberty St., New York.

Catalogue valuable. Publish many standard technical and engineering books, as S. P. Thompson's Books on Dynamo Electrical Machines, Gas Engines, etc.

They also publish a series of 25 cent books on various subjects, written in a style to interest boys. A partial list includes:—Dry Batteries, Electric Currents and Diagrams, Electric Bells and Alarms, Modern Primary Batteries, Experiments with Induction Coils, Wireless Telegraphy, Electroplating, Induction Coils, How to Make and Use Them, Small Dynamos and Motors, Small Accumulators, Electric Lighting.

William Wood & Company, 51 Fifth Ave., New York.

SELECTED LIST. I.

The following list of books is recommended as an especially serviceable library of Physics costing $30. These books can now be purchased through DeWolfe & Fiske Co., 365 Washington St., Boston, at this price.

GANOT'S PHYSICS. Published by Wm. Wood & Co., N. Y.

TEXT BOOK OF GENERAL PHYSICS,—By J. S. Ames. Published by American Book Co.

EXPERIMENTAL SCIENCE,—By George M. Hopkins. Published by Munn & Co., New York.

PRINCIPLES OF MECHANICS,—By T. M. Goodeve. Published by Longmans, Green & Co.

ELEMENTARY EXPERIMENTAL MECHANICS,—By A. W. Duff. Published by The Macmillan Co.

THEORY OF HEAT,—By T. Clark Maxwell. Published by Longmans, Green & Co.

THE NEW KNOWLEDGE,—By R. K. Duncan. Published by A. S. Barnes & Co.

LIGHT, VISIBLE AND INVISIBLE,—By S. P. Thompson. Published by The Macmillan Co.

ELEMENTARY ELECTRICITY AND MAGNETISM,—By Jackson & Jackson. Published by The Macmillan Co.

ELECTRICITY IN DAILY LIFE. Published by Chas. Scribner's Sons.

ELECTRICITY AND MATTER,—By J. J. Thompson. Published by Chas. Scribner's Sons.

LESSONS IN ELEMENTARY PRACTICAL PHYSICS. Vols. I, II, III,—By Stewart & Gee. Published by The Macmillan Co.

C. G. S. SYSTEM OF UNITS,—By J. D. Everett. Published by The Macmillan Co.

ONE THOUSAND PROBLEMS IN PHYSICS,—By Palmer & Snyder. Published by Ginn & Co.

SELECTED LIST. II.

The following list is also recommended in connection with List I as forming together an excellent $60 library.

MODERN THEORY OF PHYSICAL PHENOMENA,—By Augusto Righi. Published by The Macmillan Co.

UNIVERSITY PHYSICS, Vol. I and II,—By H. S. Carhart. Published by Allyn & Bacon.

A TEXT-BOOK OF PHYSICS,—By W. Watson. Published by Longmans, Green & Co.

MECHANICS FOR ENGINEERS,—By A. Morley. Published by Longmans, Green & Co.

MECHANICS, MOLECULAR PHYSICS AND HEAT,—By R. A. Millikan. Published by Ginn & Co.

HEAT, A MODE OF MOTION,—By John Tyndall. Published by D. Appleton Co.

LIGHT,—By Lewis Wright. Published by The Macmillan Co.

ELEMENTARY LESSONS IN ELECTRICITY AND MAGNETISM,—By S. P. Thompson. Published by The Macmillan Co.

LESSONS IN PRACTICAL ELECTRICITY,—By C. W. Swoope. Published by D. Van Nostrand Co.

MAXWELL'S THEORY AND WIRELESS ELECTRICITY. Published by McGraw Pub. Co.

ELEMENTARY ELECTRICAL CALCULATIONS,—By James & Sands. Published by Longmans, Green & Co.

STANDARD ELECTRICAL DICTIONARY,—By T. O. Sloane. Published by N. W. Henley.

DYNAMO ELECTRICAL MACHINERY, Direct Currents,—By S. Sheldon. Published by D. Van Nostrand.

NOTES AND QUESTIONS IN PHYSICS,—By John Shearer. Published by The Macmillan Co.

BOYS' BOOK OF INVENTIONS,—By S. Baker. Published by McClure, Phillips & Co.

A STORY OF NINETEENTH CENTURY SCIENCE,—By H. S. Williams. Published by Harper Bros.

HISTORY OF PHYSICS,—By Cajori. Published by the Macmillan Co.

THE TEACHING OF CHEMISTRY AND PHYSICS.—By Smith & Hall. Published by Longmans, Green & Co.

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UNIVERSITY OF CALIFORNIA LIBRARY

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